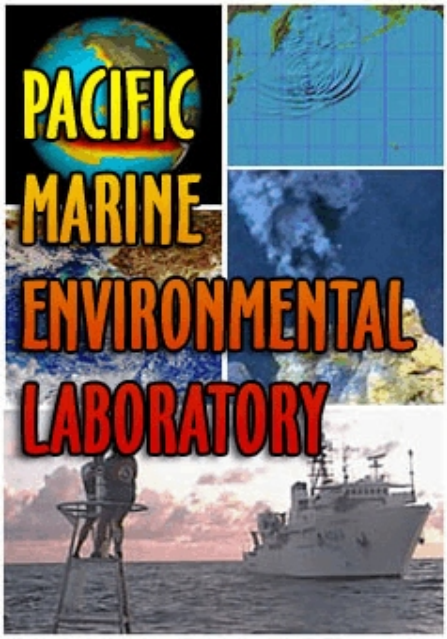
PACIFIC MARINE ENVIRONMENTAL LABORATORY — 30 YEARS OF OBSERVING THE OCEAN



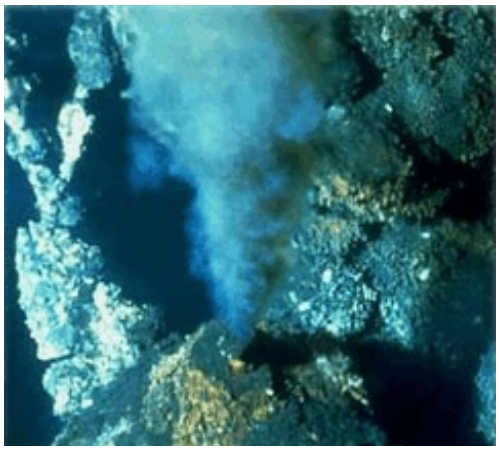
Sept. 29, 2003 — Although the NOAA Pacific Marine Environmental Laboratory in Seattle, Washington, celebrates its 30th anniversary this year, its staff has spent 43 years at sea. The figure of 15,654 days at sea was one of the many facts presented during the lab's anniversary celebration in August. That, along with 1,290 published journal articles and 352,000,000 hits on the PMEL Web page indicate that there's a log going on out on Sand Point.

For two-thirds of its life, the lab has been under the direction of Eddie Bernard. An oceanographer by training, Bernard became director in 1983, a decade after the former Pacific Oceanographic Laboratory became PMEL. "We have dedicated people at PMEL who devote a lot of energy and creativity to the work we do," he said.

National Tsunami Mitigation Program

Some of that creativity and energy became evident when in 1994 the U.S. Senate asked NOAA to come up with a plan to reduce the risk of tsunamis to coastal residents. What resulted was the National Tsunami Hazard Mitigation Program, chaired by Bernard and composed of representatives from federal, state and local agencies from West Coast states, Alaska and Hawaii, working to save lives and property. "The National Tsunami Mitigation Program initiated by PMEL is a unique and effective partnership," said Rich Eisner of the California Governor's Office of Emergency Services, one of the program members. "The integration of science and mitigation policy, the warning centers, and local emergency management, and the application of new technologies fostered by PMEL have been successful beyond expectations." Among the technological innovations is the system of buoys along the West Coast that serve as warning devices, or, as Bernard calls them, "tsunameters." The tsunami program also includes a public education component that teaches coastal residents what to do in case of a possible tsunami. Signs now indicate evacuation routes and some coastal communities have been designated "TsunamiReady" for their efforts to educate and protect their residents.

Underwater Volcanoes and Vents



As one of NOAA's "wet" labs, PMEL focuses on a variety of ocean issues. When underwater volcanoes or vents, were first discovered in the Galapagos Islands 26 years ago, PMEL was among the first to start investigating these unusual underwater communities, where unique marine life thrive on the chemical soup spewed from the sea floor. "We may be taking drugs in the future made of enzymes that are more compatible with our bodies than synthetic compounds, which may have side effects," Bernard said. "What's spewing from the ocean floor could someday give us resistance to some new strains of infection."

Fisheries Oceanography Coordinated Investigations Program

PMEL began as a "small research laboratory with emphasis on water quality and environmental impact issues" in the waters off the West Coast extending to the equatorial Pacific Ocean. It now has an international reputation in many areas, especially its ability to collect ocean data and to work collaboratively in projects that cover many disciplines. One example is the Fisheries Oceanography Coordinated Investigations program that assists in forecasting fish stocks to help ensure a reliable supply and lower costs to consumers. "In 1985, Eddie Bernard took a big risk," said Doug DeMaster of the NOAA Marine Fisheries Service. That risk was offering to establish with the Alaska Fisheries Science Center and his counterpart, William Aron, a cutting-edge, applied science program across NOAA line offices. Eighteen years after its inception, NOAA's FOCI has published more than 450 scientific articles and was awarded the Department of Commerce Bronze Medal in 2002 for "scientific achievements that have advanced fisheries oceanography and marine ecology and have contributed to building sustainable fisheries in the North Pacific." DeMaster noted, "Today, if you attend a FOCI meeting, you cannot tell which scientists are from NOAA Research and which are from NOAA Fisheries. In 1985, it took vision and courage to blur the lines between line offices. Today, it seems only natural."

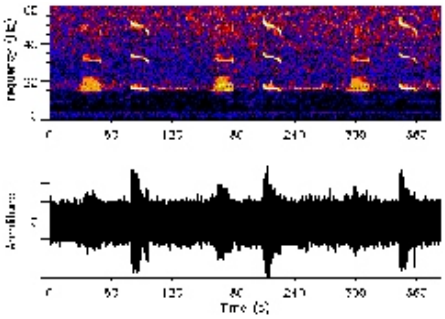
Pacific Tropical Atmosphere Ocean Array

Understanding the natural systems is a key element of the lab. "The ocean is dynamic, it moves all of the time," Bernard said. "We're now in the third generation of observing systems. In the equatorial Pacific, we have the world's longest continuous time series of open ocean data — 25 years." The equatorial Pacific also proved to be the place to be if humans wanted early warning of El Niño events. El Niño is a disruption of the ocean-atmosphere system in the

tropical Pacific having important consequences for weather around the globe. After the 1982-83 El Niño, considered the most intense in the 20th century, the challenge was given to develop some sort of early warning device so people could prepare for the devastating and beneficial aspects of an El Niño and its counterpart, La Niña. Once again, in 1994, PMEL harnessed the creativity and talent of dedicated scientists and came up with the Pacific Tropical Atmosphere Ocean (TAO) array, the world's largest ocean observing system. Bobbing in the Pacific are 70 buoys measuring and relaying surface wind, sea surface temperature, upper ocean temperatures and currents, air temperature and relative humidity in real-time via satellite.“We knew we were onto something when we linked data from the TAO buoys to the Internet and attracted millions of hits from all over the world,” Bernard said. “All it takes is time, money and commitment.”

Underwater Acoustical Monitoring

Always eager to hear what the Earth has to say, PMEL scientists also listen to the planet via underwater acoustical monitoring. Using a variety of methods, including underwater hydrophones, PMEL listens for seismic activity, marine mammals and ship traffic. The systems also have picked up some so-far unidentified sounds. “People tend to think the ocean is quiet beneath the surface,” said Christopher Fox, director of the ocean acoustics project. “But it’s pretty noisy down there.” Some things are easy to identify, Fox said, such as whales and ship traffic. But visitors to the ocean acoustics Web site can listen to such unidentified sounds that the lab has dubbed “Train,” “Upsweep,” “Whistle” and “Bloop.”



After 30 years, PMEL knows that the Earth still holds countless tantalizing secrets. And PMEL scientists and staff are eager to unlock those secrets. "As the planet aspirates, it provides new opportunities," Bernard said. "It's an ongoing science experiment with enormous challenges and rewards."

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